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What is claimed is:

1. A method for determining the level of stress in a polymeric or pre-polymeric composition within a given volume comprising the steps of:

(a) providing a polymeric or pre-polymeric composition containing a plurality of microparticles comprising a non-ferromagnetic or non-ferrimagnetic core provided with a coating that is ferromagnetic or ferrimagnetic, or a combination thereof wherein said microparticles are substantially uniformly dispersed throughout said composition,

said microparticles having a detectable magnetic characteristic which correlates with the level of stress in the composition within a given volume; and

(b) measuring said magnetic characteristic of said microparticles to determine said level of stress in said composition within a given volume.

2. The method of claim 1, wherein said core of said microparticles is selected from the group consisting of glass bubbles, glass beads, glass fibers, fumed silica particles, fused silica particles, mica flakes, polymeric particles, and combinations thereof.

3. The method of claim 1 wherein said core of microparticles comprises a glass bubble.

4. The method of claim 1 wherein said magnetic characteristic is magnetic permeability.

5. The method of claim 1 wherein said coating comprises a ferromagnetic or ferrimagnetic material.

6. The method of claim 1 wherein said coating comprises stainless steel.

7. The method of claim 1 wherein said microparticles comprise metal-coated glass bubbles wherein said metal coating is ferrimagnetic or ferromagnetic.

8. The method of claim 1 wherein said coating comprises a ferromagnetic or ferrimagnetic composition selected from the group consisting of nickel, iron, alloys thereof and oxides thereof.

9. The method of claim 1 wherein said microparticles have an average major dimension between about 10 micrometers to about 1 millimeter.

10. The method of claim 1 wherein said coating has an average thickness ranging from about 0.1 nanometers to about 5 micrometers.

11. The method of claim 1 wherein said coating has an average thickness ranging from about 1 nanometer to about 200 nanometers.

12. The method of claim 1 wherein said coating is in the form of a substantially continuous coating on said core.

13. The method of claim 1 wherein said composition between about 0.01 and 80% by volume of said microparticles.

14. The method of claim 1 wherein the stress level in the composition containing said microparticles is used to determine the degree of cure of said composition.

15. The method of claim 1 wherein the stress level in the composition containing said microparticles is used to determine the level of external forces applied to said composition.

16. The method of claim 1 wherein said polymeric or pre-polymeric composition is an adhesive.

17. The method of claim 1 wherein said polymeric or pre-polymeric composition is a thermosetting or a thermoplastic material.

18. The method of claim 17 wherein the level of stress in the composition containing said microparticles is used to determine the thermal history of said composition.

19. The method of claim 16 wherein the stress level in the adhesive containing said microparticles is used to determine the amount of adhesion of the adhesive to a substrate.

20. The method of claim 1 wherein the stress level in the composition containing said microparticles is used to determine the direction of the stress in the composition.

21. The method of claim 1 wherein said measured magnetic characteristic is inductance.

22. The method of claim 1 wherein said measured electromagnetic characteristic is inductive reactance.

23. The method of claim 1 further comprising the step of correcting the measurement of said magnetic characteristic for temperature.

24. A method for measuring the level of stress in a polymeric or a pre-polymeric composition within a given volume comprising the steps of:

(a) combining said polymeric or pre-polymeric composition with a plurality of microparticles comprising a non-ferromagnetic or non-ferrimagnetic core provided with a coating that is ferromagnetic or ferrimagnetic, or a combination thereof to form an admixture in

which said microparticles are substantially uniformly dispersed throughout said composition,

said microparticles having a detectable magnetic characteristic which correlates with the level of stress in the composition within a given volume; and

(b) measuring said magnetic characteristic of said microparticles to determine said level of stress in said composition within a given volume.

25. The method of claim 24 comprising dispensing said admixture while measuring the magnetic characteristic of said microparticles to determine the stress level of said polymeric or pre-polymeric composition in said admixture being dispensed.

26. The method of claim 24 comprising combining a first polymeric or pre-polymeric composition with a second polymeric or pre-polymeric composition to form a reaction mixture, said method comprising combining at least one of said polymeric or pre-polymeric compositions with said microparticles prior to combining said first and second polymeric or pre-polymeric compositions together.

27. The method of claim 26 comprising measuring said magnetic characteristic of said microparticles in said reaction mixture.

28. The method of claim 26 comprising combining both of said polymeric or pre-polymeric compositions with said microparticles.

29. The method of claim 26 wherein said microparticles in said first polymeric or pre-polymeric compositions are different from said microparticles in said second polymeric or pre-polymeric composition.

30. The method of claim 1 wherein said polymeric composition is selected from the group consisting of epoxy resins, polyurethanes, and acrylates.

31. The method of claim 30 comprising depositing said composition containing said microparticles on a substrate and measuring the magnetic characteristic of said microparticles to determine the level of stress in said composition.

32. A method for measuring the level of stress in a polymeric or pre-polymeric composition within a given volume comprising the steps of:

(a) combining said polymeric or pre-polymeric composition with a plurality of coated glass bubble microparticles, where said coating is ferromagnetic or ferrimagnetic to form an admixture in which said microparticles are substantially uniformly dispersed throughout said composition,

said microparticles having a detectable magnetic characteristic which correlates with

the level of stress in said composition within a given volume; and

(b) measuring said magnetic characteristic of said microparticles to determine said stress level of said composition within a given volume.

33. A method of measuring inductance or inductive reactance of a sample comprising the steps of:

(a) measuring the inductance or the inductive reactance of the sample; and

(b) correcting said measurement of inductance or inductive reactance for temperature.

34. The method of claim 1 wherein said polymeric or pre-polymeric composition containing said microparticles is an adhesive and wherein said level of stress is used to determine the amount of adhesion of said adhesive to a substrate.

35. The method of claim 1 wherein said polymeric or pre-polymeric composition containing said microparticles is an adhesive and wherein said level of stress is used to determine the quality of adhesion of said adhesive to a substrate.

36. The method of claim 1 wherein said polymeric or pre-polymeric composition containing said microparticles is an adhesive and wherein said level of stress is used to determine the amount of and quality of adhesion of said adhesive to a substrate.